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10/601,922	06/23/2003	Yaolong Chen	90113	7549

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EXAMINER

LAZORCIK, JASON L

ART UNIT PAPER NUMBER

1731

DATE MAILED: 10/26/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/601,922

Applicant(s)

CHEN ET AL.

Examiner

Jason L. Lazorcik

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 18 August 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-10, 12-14, 17-43 and 45-50 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) 25, 26 and 36 is/are allowed.
- 6) ☒ Claim(s) 1-10, 12-14, 17-24, 27-35, 38-43 and 45-50 is/are rejected.
- 7) ☒ Claim(s) 37 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 23 June 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Claim Objections

Claim 37 is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. The immediate claim indicates that the grooves are provided for "flushing fluid to said cutting elements". The immediate claim amounts to a statement of intended use of the grooves in the separating body but provides no further limitation upon the parent claim drawn to structure of a device.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 12 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Specifically, applicants limitation of the separating body as being "spherical-cap-like" in line 2 is fails to clearly an unambiguously set forth the metes and bounds for which the applicant seeks patent protection.

Claim Rejections - 35 USC § 103

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The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 1-10, 12-14, 17-24, 27-35, 38, and 40-50 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lipkins (US 3,088,253) in view of Fisher (US 3,292,237).

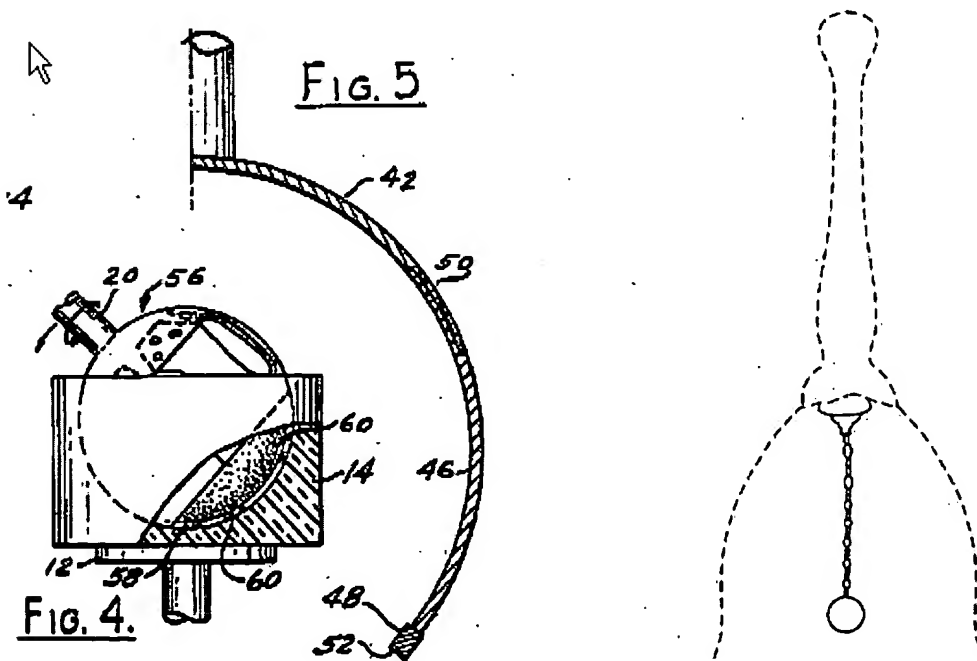
Regarding Claims 1-14, Lipkins teaches the production of "a spherical part from a body of fracturable material and at the same time providing a spherical hollow in the body of the material" (Column 1, Lines 8-11) and that the materials of construction of said body include hard, fracturable materials such as quartz (Column 1, Lines 15-18). Through a single cutting operation, two optical elements are simultaneously produced with one having a generally convex shape and the other presenting a generally concave shape. This process of producing the spherical cut is accomplished by advancing a spherical or "bell shaped" carrier with a diamond edged on the circumference or periphery thereof through the body material. Both the receptacle supporting the body

material and the cutter are rotated about respective axes or "a rotating axis which passes through a center point" while the cutter is further swung gradually through an angle to increase its penetration into the body" (Column 1, Lines 41-48). Since both optically transparent pieces resulting from the cut have curved surfaces, they are inherently understood to perform in the capacity of a lens or optical element.

It is here noted that the spherical carrier disclosed in the Lipkin document is broadly understood as being in "the form of a bell" and therefore reads upon the applicants "spherical-cap-like separating body with a partial spherical shell in the form of a bell". The following images compare the cutting devices disclosed by applicant with a generally bell shaped outline

(<http://images.replacements.com/images/images2/crystal/R/P0000226202S0009T2.jpg>)

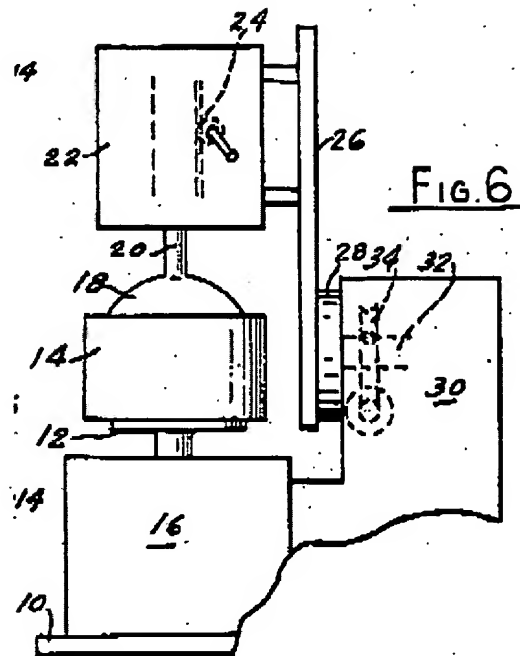
Further, Lipkin indicates that the diamond-edged cutter with a spherical carrier has "approximately the same radius as the desired cut" (Column 1, Line 43-44).



Regarding Claim 7, Lipkins did not teach producing lenses from calcium fluoride, barium chloride, magnesium fluoride or lithium fluoride. Lipkins only mentioned fused quartz, silicon and germanium by name. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to use the method of Lipkins to make lenses from the claimed materials because those are frangible materials which are very similar to fused quartz, silicon and germanium and a person of skill in the art at the time the invention was made would have expected the similar materials to react similarly in a cutting method.

Regarding Claim 17, it is also clear from the above excerpt from Lipkin that the spherical carrier provides a bore in which the but body can be accommodated and which is supported on its outer circumferential wall (42) by a holding device and the cutting elements (48, 52) are arranged on the inner circumference of the shell.

Claims 18 through 20 obvious from the device depicted in the immediate reference Figure 6 where a clamping device secures the shaft (20) of the spherical carrier in what is broadly interpreted as a "cylindrical housing". It is further noted that this mechanical arrangement is routinely utilized in commercially available drill press devices and would have been an obvious mechanical interconnect for one of ordinary skill.



Regarding Claims 27-30, Lipkin teaches that the inner part of the body being cut (e.g. the convex surface) can be supported by an adherent support, similar to the support of the body itself, where there is no interference between the cutter and the support.”(Column 1, Line 70 to Column 2, Line 3, and column 4, Lines 8-34). It would have been obvious to one of ordinary skill in the art at the time of the invention to utilize any adhesion means appropriate including pneumatic, mechanical, hydraulic, or magnetic to secure the separate pieces of the body as described. Further, since the body receptacle is provided with a rotational driving force, it would be necessary and obvious to one of ordinary skill in the art to provide the upper receptacle with a “follower device” in order to avoid generating stress at the interface between the cutting surface and the body during a cutting operation. This follower device and body receptacle will naturally be rotationally displaced in the direction of the rotating axis which passes through the pivoting point during a normal cutting operation as disclosed above. Finally,

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since both the upper and lower segments of the body are secured to receptacles as disclosed above, it would be obvious to maintain both pieces of the body under a nominal tensile stress during the cutting operation in order to insure that the spherical cutting body is not placed under an undue compressive force which could increase the frictional wear upon the cutting body.

With respect to Claims 32 –35, and 40, Lipkins teaches (See figures 2,3, and 5) a separating body divided into 2 or more parts which upon assembly provide pass through depressions, bores, or grooves which penetrate the thickness of the wall of the spherical carrier or the circumferential wall.

Regarding Claim 38, Lipkin indicates that the spherical cutter has a “cutting edge of diamond dust imbedded in a suitable metal carrier”. Where the diamond dust particles are understood as the cutting elements, the cutting elements are understood to be irregularly arranged on the separating body or the spherical carrier (Column 2, Line 67-69).

With respect to Claims 21-24, Lipkin fails to explicitly indicate that the cutting device should be provided with damping elements. Fisher (US 3,292,237) teaches that by reducing the vibration of a cutting tool, chatter associated with a cutting operation of the tool is reduced and the chipping of the cutting edge is in most cases eliminated (Column 1, Lines 18-21). The reference discloses that a coating of plastic material is adhered over the body and the head of the tool (Column 1, Lines 59-60), and “in some instances the entire tool is coated except for the cutting edges to provide greater protection against vibration, chatter and chipping.”(Column 2, Lines 59-61). It would

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have therefore been obvious to one of ordinary skill in the art at the time of the invention to provide the separating body disclosed by Lipkin with a vibrational damping element as set forth by Fisher in order to reduce the chatter of the separating body during a cutting operation. This would have been an obvious modification to one of ordinary skill in the art seeking to extend the working life of said separating body by reducing chipping of the cutting surface. A coating of the separating body further reads upon claim 31 wherein the separating body has "a vibration-damping construction.

Claim 39 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lipkins (US 3,088,253) and Fisher (US 3,292,237) as applied to claim 12 above, and further in view of Lipkins (US 3,159,952). The combined prior art did not teach wedge-shaped cutting elements. Lipkins '952 taught the use of wedge shaped cross-section cutting elements (see figures 5-7 and col. 3, line 71 to col. 4, line 64). It would have been obvious to a person of ordinary skill in the art at the time the invention was made to use a cutting element from Lipkins '952 in the cutting element of prior art because Lipkins '952 taught that it would have helped produce a continuous spherical surface at the final point of breaking of the inside part from the outside part of the material.

Allowable Subject Matter

The indication of allowable subject matter as set forth in the office action dated ^{MARCH 21, 2006} XXX is hereby retracted for the reasons as clearly set forth in the rejections under 35 USC 103(a) above and as here summarized:

Prior art teaches a separating device which broadly utilizes a bell-shaped part spherical shell as discussed above. The cutting process as disclosed by Lipkin teaches

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that both ends of the cut material are secured in receptacles and it would be obvious to one of ordinary skill to hold said pieces under axial tension in order to reduce frictional wear and promote the longevity of the separating body. Further since the Lipkin device rotates the cut body and secures both the lower and upper portions of the body in the final stages of the cutting, the means of securing the upper portion of the cut body would obviously include "providing a means of rotatably mounting the scooped-out portion of the material". This would be an obvious mechanical design consideration in order to avoid application of torsional stress upon the remaining material between the cut pieces during the final stages of the cutting operation. Finally, as set forth by the teachings of Fisher, it would have been obvious to include a vibration damping mechanism in order to increase the cutting lifetime of the separating body

Claim 25, 26, and 36 objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter: Prior art as applied above does not teach nor fairly suggest a cutting element of the type disclosed above wherein the damping elements are arranged displaceably in the radial direction of the partial-spherical shell. Additionally, prior art fails to anticipate or render obvious a separating body as disclosed above wherein grooves are distributed regularly over the surface of said separating body.

Conclusion


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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jason L. Lazorcik whose telephone number is (571) 272-2217. The examiner can normally be reached on Monday through Friday 8:30 am to 5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steven Griffin can be reached on (571) 272-1189. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

JLL


ERIC HUG
PRIMARY EXAMINER